6.0 ED/EP-Related Requirements

The study recognizes the essential need of getting ED/EP-related requirements into operational requirements documents that drive the platform and infrastructure design to handle ED/EP and the CLOE.

This 20-page section of the EDAPS report presents an analysis of:

- User needs
- Platform requirements
- C2 systems requirements
- Logistics management information requirements
- Information exchange requirements
- Results of ORD reviews for ED/EP-related capabilities.

Platform data from the user perspective addressed:

- Who would use platform data?
- What functions would they perform using the data?
- What types of platform data would they need to carry out these functions?

User Needs

The user needs assessment in the EDAPS report is not intended to provide an exhaustive treatment of this topic, but to identify the major segments of platform data from the perspective of the potential users of that data. The purpose of this work was to support efforts by PM Logistics Information Systems (PM-LIS), PM TMDE, several platform PMs, and others to develop a data schema for GCSS-A/T and to develop a standardized interface between platforms with embedded diagnostics and embedded prognostics systems and GCSS-A/T. To that end, a detailed table of platform data needed was developed by 16 different user positions (e.g. tactical commander, logistical commander, life-cycle PM, etc.), and for each of these, specific functions and activities were identified, then mapped into specific platform data needed for those activities.

This preliminary user needs assessment demonstrates how timely data from self-reporting platforms is useful across a broad range of tactical and sustainment processes. The assessment resulted in the following characteristics of use:

- It provides tactical commanders and their logistics staff with critical information they need to plan and execute the battle and support the force.
- It provides staff in sustainment-focused organizations with the information they need to anticipate needs and put the right materiel in the pipeline to deployed forces.
- It removes the reporting burden from soldiers and unit commanders and greatly improves data quality.
- It removes the time lag from readiness reporting and enables commanders at all levels to use their available resources to maximize readiness.

- It provides life cycle managers with access to accurate and detailed information on what is happening on platforms so they can identify and eliminate readiness and cost drivers.
- It allows training program developers to identify training-related contributors to readiness problems and improve programs of instruction to reduce these impacts.
- It provides sustainment maintenance managers and providers with the information they need to plan and execute a cost-effective sustainment maintenance program.

Platform Requirements

This section of the EDAPS report provides an initial assessment of capabilities that would be needed on Army platforms to implement the ED/EP operating concept described in Section 3.0. These initial results are being used as a starting point for discussions with key stakeholders to develop recommended requirements for specific platforms. ORD terminology has been adopted in the descriptions, which include threshold and objective performance targets where they can be specified with available information. The capabilities/requirements are presented for each of the following areas:

- Embedded readiness monitoring system
- Embedded diagnostics
- Integration with component health monitoring systems
- Embedded prognostics
- Embedded IETM
- C2 system interface
- Data capture and storage
- Configuration data
- Interactive PMCS
- Portable aids
- Interface with logistics MIS
- Receive data from the logistics MIS.

Example: A platform configuration description will be captured and maintained to the LRU level. Hardware configuration should be maintained at the NSN and serial number level, and should include the installation date. Software configuration will be maintained by title, location and version number. The capture and storage of the configuration data will become an automated function. This automation will require implementation of other enablers such as the use of AIT technology to track LRUs and end items by serial number. A version of the configuration database will be kept on the platform for use by the mechanic, and configuration data will be transferred to the Logistics MIS for access by other users. The threshold requirement is a configuration description that covers components that are designated as cost or readiness drivers. The objective requirement is to maintain a platform-specific configuration description that covers all mission-critical hardware and software on the platform.

C2 Systems Requirements

This section discusses ED/EP-related requirements for command and control systems. The capabilities are not confined to logistics functions because many of the logistics sustainment processes also have command and control implications. The discussion focuses on platform-level C2 systems and the C2 systems that support tactical commanders and logistics staff at brigade or unit-of-action level and below. Requirements are discussed for:

- Platform interface
- Automate status reporting
- Readiness-based reporting
- Flexible reporting process
- Supply point status
- Use platform data in operational planning
- Use platform data to enhance situation awareness
- Use platform data in logistics C2
- Distribute and exchange data.

Example: The Tactical C2 System will have a hardware and software interface with the embedded health monitoring system on the platform. Platforms cannot be self-reporting without this interface. The embedded readiness monitoring system has the data necessary to automatically populate status reports and requests for logistics assistance. The C2 system can move the data off the platform to users in the tactical community. In the objective force, this interface will probably be standardized. In the interim force, a flexible approach is needed for the physical interface. Current platforms use or plan to use serial interfaces (RS232, RS422 and RS485), sensor link protocol, MIL-STD-1553, automotive data bus standards (CanBus, J1708, J1587), and Ethernet.

Logistics Management Information Systems Requirements

GCSS-A will be the primary logistics management information system using an enterprise resource planning system interface with the interim and objective forces. The sustainment- and tactical-level portions of GCCS-A will tie in through a commercial enterprise resource planning system as the "core" software. This will allow users across the Army to access a common set of logistics data in the "enterprise data warehouse." Although GCSS-A will use the core software provide by the enterprise vendor, it will also require development of specialized software applications to support Army-unique functions that use the data in the enterprise warehouse. EDAPS has conducted a preliminary assessment of the capabilities that will be required in GCSS-A to make the vision in Section 3.0 a reality. The GCCS-A capabilities and requirements for logistics management information systems are outlined in detail in the areas of:

- Platform interface
- Platform data warehouse
- Maintenance management
- Readiness management
- Crew or maintainer interface
- Mechanic/maintainer interface
- Technical data updates
- Data from other sources
- C2 system interface
- Life-cycle management
- Inventory management
- Sustainment maintenance management
- Rebuild or overhaul process support.

Example: GCSS-A will maintain the primary warehouse for data downloaded from embedded systems on platforms. This data is expected to conform to a data standard such as an updated version of MIL-STD-3008. The EDAPS objective is for all data to be XML compliant. Example data types include health status, platform configuration, sensor logs, event logs, operating hours, speed log, acceleration log, external environment, geographic location, operator ID, rounds fired, firing rate, fault codes, diagnostics session logs, maintenance action, date performed, time required, mechanic ID, components replaced by serial number, and software updates installed. The platform data warehouse will include the platform configuration database. GCSS-A will link the platform data warehouse to the Army's shared data environment. Through this link, any authorized user in the Army will have access to the platform data warehouse.

Information Exchange Requirements

EDAPS has developed a preliminary information exchange matrix for systems required to generate, capture, move, and use platform data. It is intended to illustrate the major types of data that move between the systems. The matrix specifies five systems, the other systems each interfaces with, what data it receives from the interfaced system, and what data it sends to the interfaced system. The five systems mapped are:

- System and Component Health Monitoring System
- Platform Readiness Monitoring System
- Tactical C2 System
- Logistics C2 System
- Tactical Logistics MIS.

ORD Reviews

EDAPS surveyed existing ORDs for major platforms and systems and provided inputs to the user based on their reviews. As of the 31 December 2002, 35 formal requirements reviews had been conducted.